

Customer No.: 31561
Application No.: 10/710,405
Docket No.: 13302-US-PA

AMENDMENT

To the Claims:

1. (currently amended) A process of fabrication a semiconductor structure, comprising:

providing a substrate;

forming a dielectric layer over the substrate;

forming a hydrophilic material layer over the dielectric layer to form a structure
comprised of the substrate, the dielectric layer and the hydrophilic material layer, wherein
residuals are formed on at least one of a upper bevel of the structure, a lower bevel of the
structure, a side wall of the structure and a combination thereof ~~an edge of at least one of the~~
~~substrate, the dielectric layer, the hydrophilic material layer or a combination thereof~~;

performing a polish process on at least one of the upper bevel of the structure, the lower
bevel of the structure, the side wall of the structure and a combination thereof ~~the edge of at least~~
~~one of the substrate, the dielectric layer, the hydrophilic material layer or a combination thereof~~
to remove the residues; and

forming a hardmask layer over the hydrophilic material layer.
- Claim 2. (canceled)
3. (previously presented) The process of claim 1, wherein the polish process comprises at
least one of an upper bevel polish, a lower bevel polish, a side polish or a combination thereof.
4. (original) The process of claim 1, wherein a method of forming the dielectric layer
comprises a spin on coating method or a chemical vapor deposition method.

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5. (original) The process of claim 1, wherein a material of the dielectric layer comprises an organic dielectric material, a carbon-containing dielectric material or a carbon-containing oxide material.

6. (original) The process of claim 1, wherein the dielectric layer is composed of at least a precursor comprising tetramethyl-cyclotetra-siloxane (TMCTS), trimethyl-silane (3MS), tetramethyl-silane (4MS), dimethyl-dimethoxy-silane (DMDMOS), octamethyl-cyclotetra-siloxane (OMCTS), diethoxy-methyl-silane (DEMS), or tetramethyl-disiloxane (TMDSO).

7. (original) The process of claim 1, wherein a material of the hydrophilic material layer comprises silane (SiH_4) containing material, tetraethyl-ortho-silicate (TEOS) oxide containing material or silicon nitride.

8. (original) The process of claim 1, wherein a material of the hardmask layer comprises aluminum (Al), titanium nitride, tantalum nitride, titanium silicon nitride (TiSiN), tungsten nitride, tungsten silicon nitride (WSiN) or refractory nitride.

Claims 9-26 (canceled)

27. (currently amended) A process of fabrication a semiconductor structure, comprising:
providing a substrate;
forming a first dielectric layer over the substrate;
forming a first hydrophilic material layer over the first dielectric layer to form a first structure comprised of the substrate, the first dielectric layer and the first hydrophilic material layer, wherein first residuals are formed on at least one of a upper bevel of the first structure, a

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lower bevel of the first structure, a side wall of the first structure and a combination thereof ~~an edge of at least one of the substrate, the first dielectric layer, the first hydrophilic material layer and a combination thereof;~~

performing a first polish process on at least one of the upper bevel of the first structure, the lower bevel of the first structure, the side wall of the first structure and a combination thereof ~~the edge of at least one of the substrate, the first dielectric layer, the first hydrophilic material layer and a combination thereof~~ to remove the first residues;

forming a first hardmask layer over the first hydrophilic material layer;

forming a second dielectric layer over the first hardmask layer;

forming a second hydrophilic material layer over the second dielectric layer to form a second structure comprised of the substrate, the first dielectric layer, the first hydrophilic material layer, the second dielectric layer and the second hydrophilic material layer, wherein second first residuals are formed on at least one of a upper bevel of the second structure, a lower bevel of the second structure, a side wall of the second structure and a combination thereof ~~an edge of at least one of the substrate, the first dielectric layer, the first hydrophilic material layer, the second dielectric layer, the second hydrophilic material layer or a combination thereof;~~

performing a second polish process on at least one of the upper bevel of the second structure, the lower bevel of the second structure, the side wall of the second structure and a combination thereof ~~the edge of at least one of the substrate, the first dielectric layer, the first~~

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~~hydrophilic material layer, the second hydrophilic material layer or a combination thereof to~~
remove the second residues; and

forming a second hardmask layer over the second hydrophilic material layer.

28. (previously presented) The process of claim 27, wherein the first and second polish processes comprise at least one of an upper bevel polish, a lower bevel polish, a side polish or a combination thereof, respectively.

29. (previously presented) The process of claim 27, wherein a method of forming the first and second dielectric layer comprises a spin on coating method or a chemical vapor deposition method.

30. (previously presented) The process of claim 27, wherein the first and second dielectric layer comprise an organic dielectric material, a carbon-containing dielectric material or a carbon-containing oxide material, respectively.

31. (previously presented) The process of claim 27, wherein the first and second dielectric layer are composed of at least a precursor comprising tetramethyl-cyclotetra-siloxane (TMCTS), trimethyl-silane (3MS), tetramethyl-silane (4MS), dimethyl-dimethoxy-silane (DMDMOS), octamethyl-cyclotetra-siloxane (OMCTS), diethoxy-methyl-silane (DEMS), or tetramethyl-disiloxane (TMDSO), respectively.

32. (previously presented) The process of claim 27, wherein the first and second hydrophilic material layers comprise silane (SiH_4) containing material, tetraethyl-ortho-silicate (TEOS) oxide containing material or silicon nitride, respectively.

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33. (previously presented) The process of claim 27, wherein the first and second hardmask layers comprise aluminum (Al), titanium nitride, tantalum nitride, titanium silicon nitride (TiSiN), tungsten nitride, tungsten silicon nitride (WSiN) or refractory nitride, respectively.

34. (previously presented) The process of claim 27, further comprising forming a via in the first dielectric layer, the first hydrophilic layer and the first hardmask layer.

35. (previously presented) the process of claim 34, further comprising forming a trench in the second dielectric layer, the second hydrophilic layer and the second hardmask layer, and the via is exposed within the trench.